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**PATELLO-FEMORAL CARTILAGE DAMAGE: PATIENTS WITH GRADE 4 CHONDRAL DEFECTS OF THE PATELLA HAVE INCREASED DISABILITY**K.K. Briggs, J. Steadman. *Steadman Philippon Res. Inst., Vail, CO, USA*

**Purpose:** Patello-femoral (PF) cartilage damage can cause severe knee pain and result in increasing disability. The purpose of this study was to identify factors associated with grade 4 defects of the patello-femoral joint.

**Methods:** A cohort of 2601 patients (average age=45, range, 18 to 83) who underwent knee arthroscopy for knee pathology were studied prospectively. All patients had complete demographic data, surgical data, WOMAC scores, and health status (SF12) collected at initial exam and stored in a data registry. Patients with chondral defects of the knee were included. Patients less than 18 years of age were excluded.

**Results:** Grade 4 PF chondral defects were seen in 23% (586) of knees, with 6% (150) patellar (PAT) defects, 10% (267) trochlear groove (TG) defects and 6% (169) combined PAT and TG defects. 29% of patients with grade 4 PF chondral defects had medial compartment chondral defects, while 14% of patients with no PF chondral defect had medial compartment chondral defects ( $p<0.001$ ). 20% of patients with PF chondral defects had lateral compartment chondral defects, while 12% of knees with no PF chondral defect had lateral compartment chondral defects. PF chondral defects were 3.0 [95%CI: 2.1 to 4.3] times more likely to be chronic injuries. Knees without PF defects were 20 [95%CI: 15.7 to 26.2] times more likely to have ligament injuries than knees with PF defects. Patients with grade 4 TG defects were older (51 vs 45) and had increased stiffness (how was stiffness determined?) compared to other patients ( $p<0.001$ ). Patients with grade 4 PAT defects were older (52 vs 45;  $p<0.001$ ) and had increased pain compared to other patients. Patients with diffuse grade 4 PAT defects had increased age, increased WOMAC (increased disability) and decreased Lysholm scores.

**Conclusions:** This study confirms that grade 4 defects of the PF compartment are common. They often occur with chondral defects in other compartments; however, they are not associated with ligament or meniscus injuries. Patients with PF defects are older than patients with other cartilage damage, and patients with grade 4 diffuse defects of the patella suffer the most disability and loss of function. These data confirm the importance of new treatment strategies for chondral defects of the patellofemoral compartment, especially since patellar resurfacing remains controversial.

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**ARTHROCENTESIS TRAINING USING A KNEE SIMULATION MODEL**J. Brodsky, E. Patton, H.D. Fischer. *Beth Israel Med. Ctr., NY, USA*

**Purpose:** Arthrocentesis of the knee is one of the most commonly performed procedures in the evaluation and treatment of joint diseases. The American Board of Internal Medicine requires that all candidates demonstrate competency in arthrocentesis. Unfortunately, physicians may have limited exposure to patients requiring this procedure and alternative training methods may be needed. We studied the benefit of using a specialized knee mannequin for simulation training of arthrocentesis.

**Methods:** We developed a program for simulation training in arthrocentesis. The goal was to assess whether such a program is beneficial in acquiring the skills needed to perform the procedure. Internal Medicine residents and medical students were given a didactic lecture on the principles of joint aspiration. This was followed by hands on training by all participants using a simulated knee joint (Sawbones - Pacific Research Labs Inc, Vashon Island, WA). This knee model is equipped with an electric buzzer. When the procedure is correctly performed, the buzzer provides immediate feedback. All participants completed an anonymous questionnaire on arthrocentesis before and after the training session.

**Results:** 41 Internal Medicine residents, PGY1: 13, PGY2: 10, PGY3: 8, PGY4: 1, as well as 9 medical students participated. 64.4% were male and 36.4% were female. Only 9.8% of those surveyed felt that they were adequately trained in medical school in arthrocentesis. Preparedness to perform arthrocentesis was measured on a scale of 1, being the least prepared, to 10, being the most prepared. Preprogram preparedness averaged 3.36 and post program preparedness rose to 6.95 ( $p<0.001$ ). Similarly, preprogram confidence in performing arthrocentesis measured 2.75 and post program confidence rose to 6.82 ( $p<0.001$ ). Prior to simulation training, 56.1% felt reluctant to perform a needed arthrocentesis, which decreased to 31.7% following the training ( $p$ -value=0.0124).

**Conclusions:** The use of a knee simulation model to train Internal Medical residents and medical students in the performance of

arthrocentesis was studied. This training increased the participants' confidence, preparedness, and comfort in performing the procedure. When there are a limited number of patients requiring arthrocentesis available to train residents in this procedure, the use of a simulation knee model appears to be a valuable alternative.

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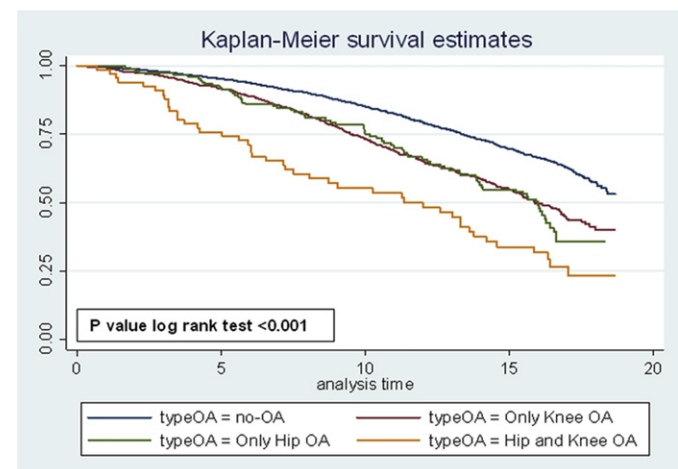
**OSTEOARTHRITIS AND MORTALITY: META-ANALYSIS OF TWO PROSPECTIVE COHORTS**M.C. Castano Betancourt, A. Dehghan, N. Campos, L. Oei, T. Hoeven, E. Oei, F. Rivadeneira, O. Franco, A. Hofman, A. Uitterlinden, S. Bierma-Zeinstra, J. van Meurs. *ErasmusMC, Rotterdam, The Netherlands*

**Purpose:** Although osteoarthritis is the most prevalent form of degenerative joint disease affecting elderly individuals worldwide, limited information exist regarding its association with mortality. Aim: To determine the effect of osteoarthritis on mortality establishing the contribution of comorbidities, functional limitation and disability.

**Methods:** Meta-analysis from two longitudinal population based cohorts in 9150 individuals (Rotterdam Study I and II). Participants were evaluated for hip and knee osteoarthritis at baseline and follow up. Causes of death were registered during a mean follow up time of 13.2 and 7.7 years respectively, using the International Classification of Diseases, tenth Revision (ICD-10). Multivariate Cox regression models stratified for gender and adjusted for age, risk factors including disability and comorbidities were used to analyze the relation of osteoarthritis and mortality in 7304 individuals with scored radiographs. Differences in survival time in years were estimated using Kaplan and Meier survival analysis.

**Results:** Women with radiographic hip or knee osteoarthritis have a higher overall mortality compared to women without osteoarthritis (hazard ratio [HR], 1.24 95%CI: 1.11-1.38). Diabetes, dementia, analgesic use, difficulties in functional activities and walking disability were more prevalent in females with OA and partially explained the higher mortality in these participants (adjusted HR: 1.19, 95%CI: 1.06-1.33). Females with osteoarthritis, especially with both joints affected (hip and knee) had the highest mortality risk (Figure 1, adjusted HR: 1.63, 95%CI: 1.20-2.20). Females with hip or knee OA, difficulty in functional activities and walking disability are the most vulnerable group dying on average six years earlier than females with none of these risk factors ( $P<0.001$ ). No significant association was found for men (HR: 0.94, 95%CI: 0.82-1.07).

**Conclusions:** Females with hip or knee osteoarthritis had a decreased survival time due to all causes. Comorbidities and risk factors that are more prevalent in females with hip and/or knee osteoarthritis contributed to explain increased mortality due to cardiovascular and dementia causes. It will be necessary to determine whether the remaining independent association of OA and mortality is due to other potential systemic effects of osteoarthritis.



**Figure 1.** Comparison of cumulative survival in females according to joints affected with radiological osteoarthritis (OA) at baseline Log rank test P value <0.001 demonstrates significant differences between groups. Participants with hip and knee OA have a decreased survival time compared to controls (P value<0.001).